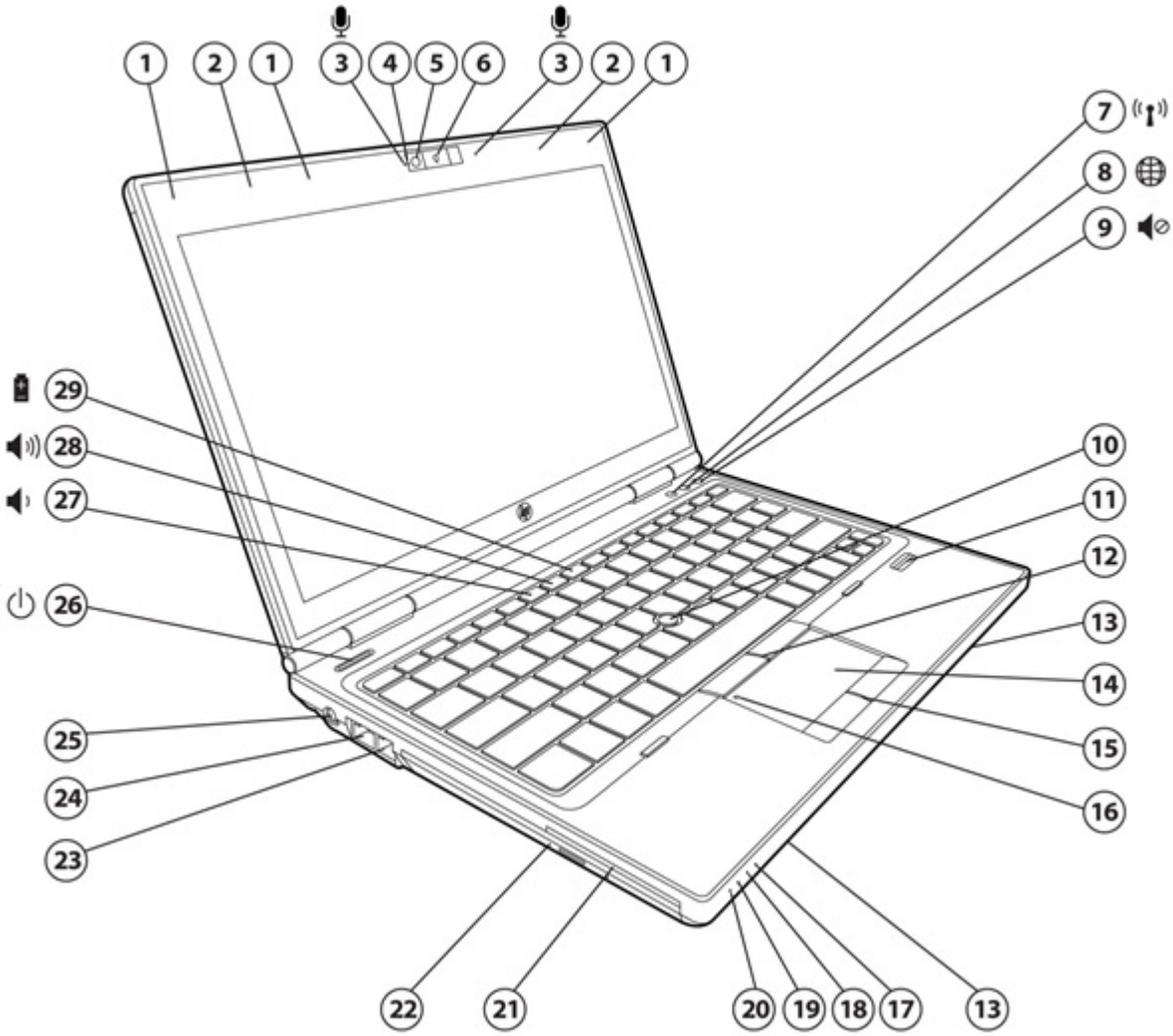
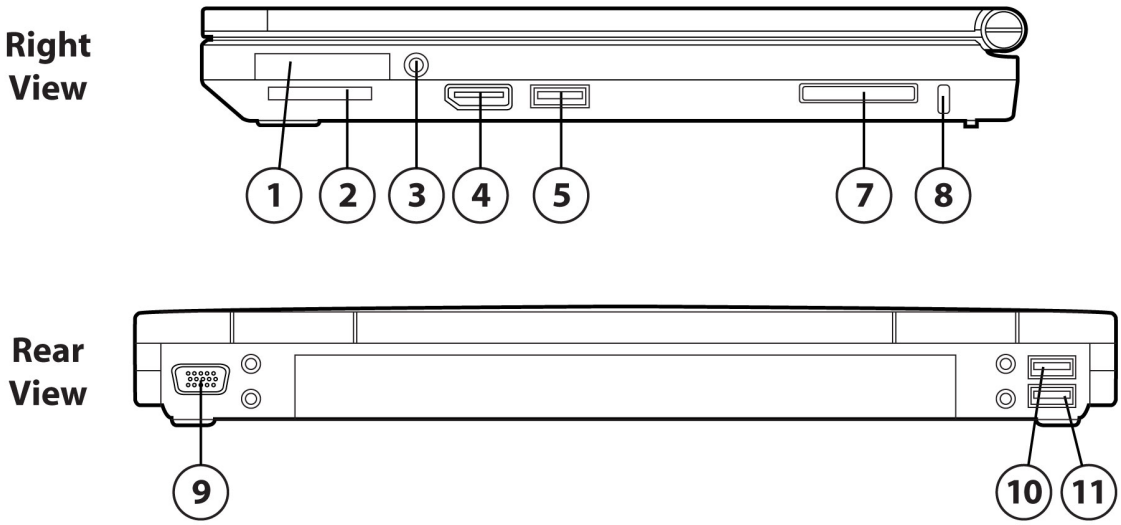
Overview




1. WLAN antennas (3)
2. WWAN antennas (2)
3. Dual-microphone array
4. Webcam LED indicator
5. Optional 720p HD Webcam
6. HP Night Light button
7. Wireless on/off button with LED indicator
8. HP Web Browser button with LED indicator
9. Volume mute button with LED indicator
10. Pointstick
11. Optional HP Fingerprint Sensor
12. Pointstick buttons (2)
13. Stereo Speakers
14. Touchpad with scroll zone
16. Touchpad on/off button with LED indicator
17. Drive activity / HP 3D DriveGuard LED indicator
18. Battery charging LED indicator
19. Power/standby LED indicator
20. Wireless on/off LED indicator
21. Integrated Smart Card Reader
22. Optical drive or weight saver
23. Optional RJ-11/modem port
24. RJ-45/Ethernet port
25. Power connector
26. Power button with LED indicator
27. Volume down function key
28. Volume up function key
29. HP Power Assistant function key

## Overview

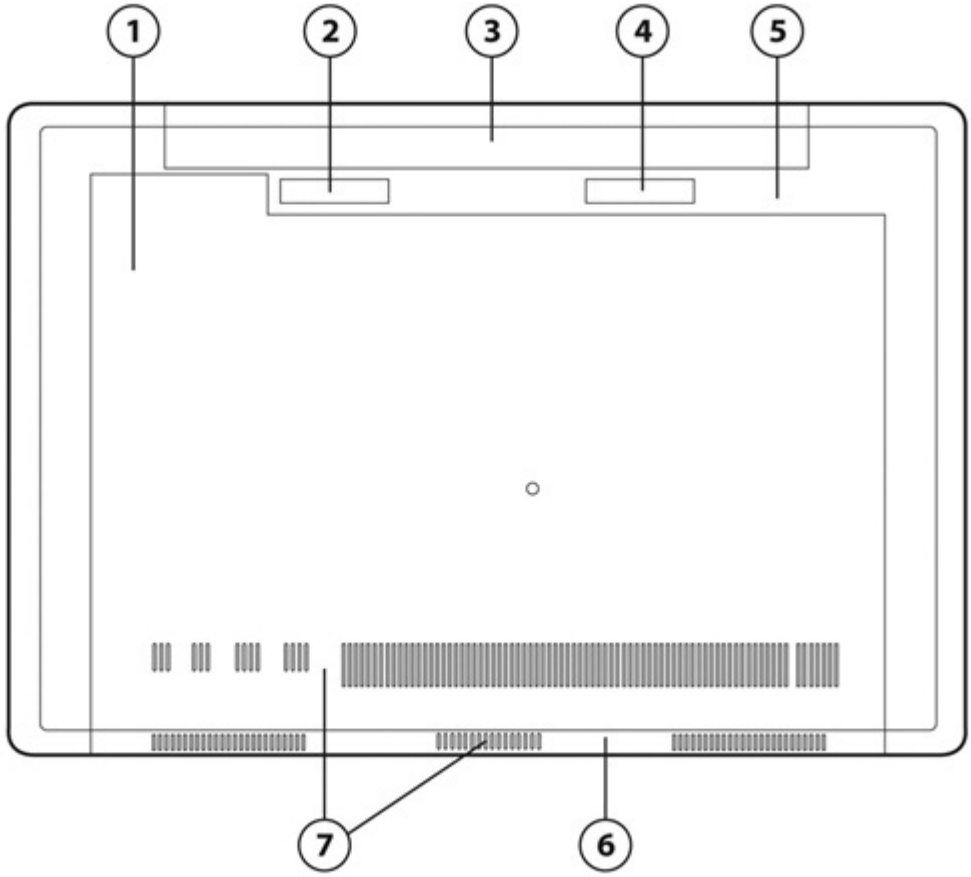
15. Touchpad buttons (2)




1. ExpressCard/34 slot
2. Secure Digital/MMC slot
3. Combo headphone/microphone jack
4. DisplayPort
5. eSATA/USB 3.0 combo port
6. Vent
7. Docking connector
8. Security Lock slot
9. VGA connector (external monitor/projector)
10. USB 2.0 charging port
11. USB 3.0 port

## Overview

Bottom View




1. Service cover
2. Docking connector
3. Battery bay
4. Battery release latch
5. SIM slot for WWAN (select models) inside battery bay
6. Bluetooth module compartment
7. Vents

Overview

## At A Glance

- Windows 8 versions, Windows 7 versions or FreeDOS
- 12.5-inch diagonal LED-backlit HD display
- Industrial, business rugged HP DuraCase construction features a full magnesium alloy chassis, wear-resistant HP DuraFinish, precision aluminum-alloy hinges, and cast titanium-alloy display latches; designed to meet the military standard Mil-Std-810G for vibration, dust, altitude, and high temperature operation*
- Spill-resistant keyboard with drains
- Choice of an Intel® Core™ i7, Core i5, or Core i3 standard voltage processor for maximum performance
- Intel vPro technology (optional) enables you to remotely monitor, diagnose, and repair PCs over the network, even if a system's OS is inoperable or it is powered off
- Optional fixed optical drive or weight saver
- Choice of 7200 rpm 2.5-inch hard drive up to 750 GB, with HP 3D DriveGuard protection; 7200 rpm Self-encrypting drive up to 500 GB, or 128/180/240GB Solid State Drive or 256 GB SED Solid State Drive
- Flexible wireless connectivity options:
  - Integrated HP hs2350 HSPA+ Mobile Broadband Module connects to both HSPA and HSPA+ (UMTS) networks and provides GPS functionality
  - Integrated HP un2430 EV-DO/HSPA Mobile Broadband Module (Gobi 3000) provides GPS functionality
  - Integrated Intel Centrino® 802.11 a/b/g/n 2x2, Broadcom 802.11 a/b/g/n 2x2 or Atheros b/g/n 1x1 wireless LAN module
  - Bluetooth® v4.0+EDR
- Choice of 9-cell, 6-cell, or 3-cell battery, including HP Long Life battery, to customize weight, run-time, and battery life to your needs
- HP Power Assistant (Windows 7 only) and HP Peak Power Manager** (web download) to conserve power, increase battery run-time, monitor power needs, and report workforce power consumption
- Integrated Intel HD Graphics 4000
- SRS Premium Sound PRO optimized for high fidelity audio
- Security features including HP Client Security (Windows 8 only) and HP ProtectTools, with central management across HP and non-HP client PCs
- Separate launch buttons for easy access to the following features: wireless on/off, HP QuickWeb, and volume mute
- DisplayPort for high resolution support
- Optional HP 2570 Series Docking Station provides additional DisplayPort, eSATA port, four additional USB ports (one charging), audio in/out ports, RJ-45, VGA, power connector, and HP Docking Station Cable Lock
- Optional 720p HD Webcam
- Dual pointing devices (touchpad with scroll zone and pointstick)
- HP Night Light
- ExpressCard/34 slot
- Secure Digital/MMC slot
- BFR/PVC-free***, ENERGY STAR qualified and EPEAT Gold registered in the U.S. EPEAT status varies by country- please see epeat.net.

* Testing was not intended to demonstrate fitness for DOD contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions.
** HP Peak Power Manager replaces HP Power Assistant for both Win7 and Win8. HP Peak Power Manager will be available on the web for download for existing product owners.
*** Meeting the industry definition of 'BFR/PVC-free' per the iNEMI Position Statement on "Low Halogen" Electronics. Plastic parts incorporated into the chassis generally contain < 1000 ppm (0.1%) of bromine or chlorine. Printed circuit board and substrate laminates generally contain < 1500 ppm (0.15%) of total bromine and chlorine. Service parts after purchase may not be BFR/PVC-free. External accessories, including power supplies, power cords, and peripherals as well as the following customer-configurable internal components: ATT SIM card are not BFR/PVC-free.

Features

## OPERATING SYSTEM

| | |
|---|---|
| **Preinstalled** | Windows 8 Pro 64*<br>Windows 7 Professional (available through downgrade rights from Windows 8 Pro)**<br>Windows 8 64*<br>Windows 7 Professional 32***<br>Windows 7 Professional 64***<br>Windows 7 Home Premium 32***<br>Windows 7 Home Premium 64***<br>Windows 7 Home Basic 32***<br>FreeDOS |
| **Supported** | Windows 8 Pro 32*<br>Windows 8 32*<br>Windows 8 Enterprise 32*<br>Windows 8 Enterprise 64*<br>Windows 7 Enterprise 32***<br>Windows 7 Enterprise 64***<br>Windows 7 Ultimate 32***<br>Windows 7 Ultimate 64***<br>Windows 7 Home Basic 64***<br>Windows XP Professional 32 |
| **Certified** | Novell SUSE Linux Enterprise Desktop<br>SUSE Linux Enterprise Desktop<br>MS WHQL |

* Not all features are available in all editions of Windows 8. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8 functionality. See http://www.microsoft.com for details.
** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.
*** Not all features are available in all editions of Windows 7. This system may require upgraded and/or separately purchased hardware to take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.

Features

## PROCESSOR

3rd Generation Intel® Core™ i7-3540M (3.0 GHz, 4 MB L3 cache, 35W, 2 cores)*
Up to 3.70 GHz with Intel Turbo Boost Technology
3rd Generation Intel® Core™ i7-3520M (2.9 GHz, 4 MB L3 cache, 2 cores)
Up to 3.60 GHz with Intel Turbo Boost Technology
3rd Generation Intel® Core™ i5-3380M (2.90 GHz, 3 MB L3 cache, 35W, 2 cores)*
Up to 3.60 GHz with Intel Turbo Boost Technology
3rd Generation Intel® Core™ i5-3360M (2.8 GHz, 3 MB L3 cache, 2 cores)
Up to 3.50 GHz with Intel Turbo Boost Technology
3rd Generation Intel® Core™ i5-3340M (2.70 GHz, 3 MB L3 cache, 35W, 2 cores)*
Up to 3.40 GHz with Intel Turbo Boost Technology
3rd Generation Intel® Core™ i5-3320M (2.6 GHz, 3 MB L3 cache, 2 cores)
Up to 3.30 GHz with Intel Turbo Boost Technology
3rd Generation Intel ® Core™ i5-3230M (2.6 GHz, 3 MB L3 cache, 2 cores)*†
Up to 3.20 GHz with Intel Turbo Boost Technology
3rd Generation Intel® Core™ i5-3210M (2.5 GHz, 3 MB L3 cache, 2 cores)†
Up to 3.10 GHz with Intel Turbo Boost Technology
3rd Generation Intel® Core™ i3-3130M (2.6 GHz, 3 MB L3 cache, 2 cores)*†
3rd Generation Intel® Core™ i3-3120M (2.5 GHz, 3 MB L3 cache, 2 cores)*

† Not available with vPro
* Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
**NOTE:** Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

## CHIPSET

Mobile Intel QM77 Express (vPro support)

## INTEL CORE I5 WITH VPRO/CORE I7 WITH VPRO TECHNOLOGY CAPABLE

Intel Core i5 with vPro and Core i7 with vPro technology is a selectable feature that is available on units configured with select processors, an Intel Centrino® Advanced-N or Ultimate-N WLAN module and a preinstalled Windows operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel Active Management Technology 8.0 (iAMT) offers built-in manageability and proactive security for networked notebook PCs, even when they are powered off* or when the operating system is inoperable. It can help identify threats before they reach the network, isolate infected systems, and update PCs regardless of their power state.
*Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

**NOTE:** Some functionality of Intel Core i5 with vPro/Core i7 with vPro technology, such as Intel Active Management technology and Intel Virtualization technology, requires additional third- party software in order to run. Availability of future "virtual appliances" applications for Intel Core i5 with vPro/Core i7 with vPro technology is dependent on third- party software providers. Compatibility with future "virtual appliances" is yet to be determined.

Features

## GRAPHICS

Integrated:
Intel HD Graphics 4000

## DISPLAY

**Internal**
12.5" diagonal LED-backlit HD 16:9 anti-glare (1366 x 768)
HP Privacy Filter support
**External**
Up to 32-bit per pixel color depth
**DisplayPort**
Supports resolutions up to 2560 x 1600, 30-bit color depth at 60 Hz, and full HD (1920 x 1080) monitors, 24-bit color depth at 120 Hz
**VGA**
Port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz

**NOTE**: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

## STORAGE AND DRIVES

**Primary Storage Bay**

**Hard Drives**
**SATA, 7mm or 9.5mm, 2.5"**
320/500 GB 7200 rpm SMART SATA II
500 GB 7200 rpm SMART SATA II Self Encrypting Drive

**SATA, 9.5mm, 2.5"**
750 GB 7200 rpm SMART SATA II

**HP 3D DriveGuard (Windows only)**
The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive

**Solid State Drive**
2.5" SSD III
128GB SATA III
180GB SATA III
240GB SATA III
256GB SATA III Self Encrypting Drive

**NOTE:** For hard drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) of system and up to 30 GB (for Windows 8) disk is reserved for system recovery software.

Features

## OPTICAL DRIVES

**Fixed 9.5 mm SATA optical drive**
DVD+/-RW SuperMulti DL Drive
DVD-ROM Drive
**Weight saver**

## MEMORY

**Standard**
DDR3 PC3-12800 SDRAM (1600 MHz)
Two SODIMM slots supporting dual-channel memory
2 GB, 4 GB, and 8 GB SODIMMs
**Maximum**
Upgradeable to 16384 MB with optional 8192 MB SODIMMs in slots 1 and 2
**Dual-channel**
Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

**NOTE**: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. With Windows Starter 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

## NETWORKING/COMMUNICATIONS

**Wireless**
Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries. Wireless LAN and integrated Bluetooth are also available (both are factory configurable only) and can be combined with any of the supported wireless WAN options.

**Broadband Wireless (WWAN)**

HP hs2350 HSPA+ Mobile Broadband Module

HP un2430 EV-DO/HSPA Mobile Broadband Module

**Integrated wireless LAN options**

Intel Centrino Advanced-N 6205 802.11a/b/g/n (2x2)

Broadcom BCM943228HM4L 802.11 a/b/g/n WiFi Adapter (2x2)

Atheros AR9485 802.11 b/g/n WiFi Adapter (1x1)

HP Integrated Module with Bluetooth 4.0+ EDR Wireless Technology

**Communications**
Integrated Intel 82579LM Gigabit* Network Connection (vPro configurations)
56K V.92 modem**
* The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
** Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

Features

## AUDIO/MULTIMEDIA

**Audio**

SRS Premium Sound PRO™
Integrated stereo speakers
Integrated microphone (dual-microphone array when equipped with optional webcam)
Button for volume mute; function keys for volume up and down
Stereo headphone/line out
Stereo microphone/line in

**Webcam**

Optional 720p HD webcam

- HD format (widescreen)
- Supports videoconferencing and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing
- Improved low light sensitivity
- Improved dynamic range

## KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

**Keyboard**

The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. U.S. and International key layouts are available. Other features include an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19 mm x 19 mm key pitch (center-to-center spacing), 2.0 mm stroke, and comfort-dished keycaps.

HP Night Light shines directly on keyboard for low-light conditions

**Pointing Devices**

Touchpad with on/off button, two-way scroll, gestures, two pick buttons
Pointstick with two additional pointstick buttons

**Buttons and Function Keys**

Discrete buttons provide easy access to the following features: wireless on/off, Web browser, and volume mute. Function keys provide control of the following features: standby mode, external display, volume down, volume up, HP Power Assistant, and display brightness.

Features

## SOFTWARE AND SECURITY

**Preinstalled Software with Windows Operating System**

Buy Office
Cyberlink Media Suite for Win 8
HP Wireless Hotspot (Windows 8 only, web download)
Adobe Flash (Windows 7 only)
PDF Complete, Corporate Edition
WinZip Basic (Windows 7 only)
Corel WinDVD (Windows 7 only)
Roxio Secure Burn (Windows 7 only)
Roxio MyDVD Business 2010 (Windows 7 only)
Skype ready*

**NOTE**: HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 16 GB (for Windows 7) of system and up to 30 GB (for Windows 8) disk is reserved for system recovery software.

* Includes reduced functionality versions of Word and Excel. Purchase of Product Key required to activate full Office 2010 suite available at participating resellers/retailers and http://www.office.com.
** Skype-ready. Skype is not offered in China.

**Security**

**Standard**
HP Client Security (Windows 8 only)
HP ProtectTools
TPM Embedded Security Chip 1.2
Drive Encryption ((will be web-only ready at Win8 GA date)
Credential Manager
Password Manager
One Step Logon
Face Recognition
SpareKey
Device Access Manager w/ JITA
Smart Card Reader
Security lock slot

**Optional**
HP Fingerprint Sensor
HP Privacy Filter
HP Combo Lock
Microsoft® Security Essentials

**NOTE**: Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging from one to five years. Service is limited, check with Absolute for availability outside the U.S.

For more information on HP security solutions refer to: http://www.hp.com/go/security.

Features

## POWER

**Power Supply**

External 65W HP Smart AC Adapter
Power cord included is 6-foot (1.8 meter).
Total length including external AC adapter is 12 feet (3.66 meter).
HP Fast Charge

**Primary Battery**

HP 9-cell Lithium-Ion Battery (100 WHr)
HP 6-cell Lithium-Ion Battery (62 WHr)
HP 3-cell Lithium-Ion Battery (31 WHr)
HP Long Life Battery (6-cell /55 WHr)

**Battery Life***

| | |
|---|---|
| **HP 9-cell Primary Battery** | Up to 15 hours and 15 minutes |
| **HP 6-cell Primary Battery** | Up to 9 hours and 15 minutes |

**System Standby Time**

Up to 30 days

*Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark http://www.bapco.com/products/mobilemark2007 for additional details.
** Configurations with integrated graphics.
NOTE: Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. Please note that 9-cell batteries and the HP Long Life Battery do not support Fast Charge.

**Power Conservation**

Supports enhanced Intel SpeedStep technology (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)
Intel Display Power Saving technology
Hibernation
Standby
ACPI compliance

## ENVIRONMENTAL

ENERGY STAR
IT ECO Declaration
EPEAT Gold where HP registers commercial notebook products. See http://www.epeat.net for registration status in your country.

**NOTE**: This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks.

Features

## WEIGHTS & DIMENSIONS

**Weight**

Starting at 3.60 lb (1.63 kg) without optical drive

**Dimensions** (w x d x h)

12.02 x 8.23 x 1.08 in (at front) / 30.5 x 20.9 x 2.7 cm (at front)

**NOTE:** Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 3-cell battery, lightest hard drive/SSD, 1 SODIMM, and weight saver. Weight varies by configuration and components.

## PORTS/SLOTS

**Ports**

VGA – One
DisplayPort – One (v1.1a)
Stereo headphone/microphone combo jack – One
Power Connector – One
Docking Connector – One
RJ-45 (Ethernet) – One
RJ-11 (Modem)– One
USB 3.0 – One
USB 2.0 – One charging port
eSATA/USB 3.0 combo port – One

**Digital Media Slots**

1 ExpressCard/34 slot, 1 Secure Digital slot (SD/MMC/SDHC/SDXC/MMC+)

## SERVICE AND SUPPORT

Limited 3-year, 1-year and 90-day warranty options available, depending on country, 1- year limited warranty on primary battery; 3-year limited warranty on HP Long Life Battery (only available with 3-year platform warranty). On-site service and warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/lookuptool. Additional HP Care Pack Services information by product is available at: http://www.hp.com/hps/carepack.

**NOTE**: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.
http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp

## SYSTEM UNIT

| | | | | |
|---|---|---|---|---|
| **Stand-Alone Power Requirements** (AC Power) | **Nominal Operating Voltage** | 18.5 V | | |
| | **Average Operating Power** | **Windows 7 (32-bit)** | **Windows 7 (64-bit)** | **SuSE Linux** |
| | | 8.03 W | 8.02 W | 13.03 W |
| | **Max Operating Power** | < 65 W | | |
| **Temperature** | **Operating** | 32° to 95° F (0° to 35° C) (not writing optical)<br>41° to 95° F (5° to 35° C) (writing optical) | | |
| | **Non-operating** | -4° to 140° F (-20° to 60° C) | | |
| **Relative Humidity** | **Operating** | 10% to 90%, non-condensing | | |
| | **Non-operating** | 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature | | |
| **Shock** | **Operating** | 40 G, 2 ms, half-sine | | |
| | **Non-operating** | 200 G, 2 ms, half-sine | | |
| **Random Vibration** | **Operating** | 0.75 grms | | |
| | **Non-operating** | 1.50 grms | | |
| **Altitude** (unpressurized) | **Operating** | -50 to 10,000 ft (-15.24 to 3,048 m) | | |
| | **Non-operating** | -50 to 40,000 ft (-15.24 to 12,192 m) | | |
| **Planned Industry Standard Certifications** | **UL** | Yes | | |
| | **CSA** | Yes | | |
| | **FCC Compliance** | Yes | | |
| | **ENERGY STAR®** | Select models* | | |
| | **EPEAT** | Registered Gold in United States** | | |
| | **ICES** | Yes | | |
| | **Australia / NZ A-Tick Compliance** | Yes | | |
| | **CCC** | Yes | | |
| | **Japan VCCI Compliance** | Yes | | |
| | **KC** | Yes | | |
| | **BSMI** | Yes | | |
| | **CE Marking Compliance** | Yes | | |
| | **BNCI or BELUS** | Yes | | |
| | **CIT** | Yes | | |
| | **GOST** | Yes | | |
| | **Saudi Arabian Compliance (ICCP)** | Yes | | |
| | **SABS** | Yes | | |
| | **UKRSERTCOMPUTER** | Yes | | |

Technical Specifications

* Configurations of the HP EliteBook 2570p that are ENERGY STAR qualified are identified as HP 2570p ENERGY STAR on HP websites and on www.energystar.gov.
** EPEAT registration varies by country. See www.epeat.net for registration status by country.
EPEAT status listed above applies to U.S.

For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

## DISPLAY

| | | | |
|---|---|---|---|
| **12.5-inch LED-backlit HD anti-glare** | **Dimensions** (W x H) | 10.63 x 6.4 in (27.7 x 15.6 cm) | |
| | **Diagonal Size** | 12.5 in (31.75 cm) | |
| | **Surface Treatment** | Anti-glare | |
| | **Contrast Ratio** | 400:1 (typical) | |
| | **Refresh Rate** | 60 Hz | |
| | **Brightness** | 200 nit (typical) | |
| | **Pixel Resolution** | **Pitch** | 0.2025 mm |
| | | **Format** | 1366 x 768 |
| | | **Configuration** | RGB Stripe |
| | **Backlight** | LED | |
| | **PPI** | 125 | |
| | **Viewing Angle** | ±30° Horizontal, ±10° Vertical (minimum) SVA 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical) | |

## STORAGE AND DRIVES

**Internal Storage**

## Technical Specifications

| | | | |
|---|---|---|---|
| **750 GB 7200 rpm SATA Hard Drive** | **Drive Weight** | 0.22 lb (101 g) | |
| | **Capacity** | 750 GB | |
| | **Height** | 0.37 in (9.5 mm) | |
| | **Width** | 2.75 in (70 mm) | |
| | **Interface** | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ | |
| | **Transfer Rate** | **Synchronous** (maximum) | 300 MB/s (Drive Capability) |
| | **Seek Time** (typical reads, including settling) | **Single Track** | 1.5 ms |
| | | **Average** | 11 ms |
| | | **Maximum** | 22 ms |
| | **Rotational Speed** | 7200 rpm | |
| | **Logical Blocks** | 1,465,149,168 | |
| | **Operating Temperature** | 32° to 140° F (0° to 60° C) [case temp] | |
| | **Features** | ATA Security | |
| **500 GB 7200 rpm SMART SATA II Self Encrypting Drive** | **Drive Weight** | 0.25 lbs (115g) | |
| | **Capacity** | 500 GB | |
| | **Height** | 0.37 in (9.5 mm) | |
| | **Width** | 2.50 in (63.5 mm) | |
| | **Interface** | ATA-8, SATA 2.6, 3.0 Gb/s | |
| | **Transfer Rate** | **Synchronous** (maximum) | 300 MB/s (Drive Capability) |
| | **Seek Time** (typical reads, including settling) | **Single Track** | 1 ms |
| | | **Average** | 12 ms |
| | | **Maximum** | 20 ms |
| | **Rotational Speed** | 7200 rpm | |
| | **Logical Blocks** | 976,773,168 | |
| | **Operating Temperature** | 32° to 140° F (0° to 60° C) [case temp] | |
| | **Features** | ATA Security | |

## Technical Specifications

| | | | |
|---|---|---|---|
| **320 GB 7200 rpm SATA Hard Drive** | **Drive Weight** | 0.25 lbs (115g) | |
| | **Capacity** | 320 GB | |
| | **Height** | 0.37 in (9.5 mm) or on some models 0.28 in (7 mm) | |
| | **Width** | 2.75 in (70 mm) | |
| | **Interface** | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ | |
| | **Transfer Rate** | **Synchronous** (maximum) | 300 MB/s (Drive Capability) |
| | **Seek Time** (typical reads, including settling) | **Single Track** | 1.5 ms |
| | | **Average** | 11 ms |
| | | **Maximum** | 22 ms |
| | **Rotational Speed** | 7200 rpm | |
| | **Logical Blocks** | 625,142,448 | |
| | **Operating Temperature** | 32° to 140° F (0° to 60° C) [case temp] | |
| | **Features** | ATA Security | |
| **SATA 6 Gb/s 256 GB, 2.5-inch SATA SED Solid State Drive** | **Drive Weight** | 73 Grams | |
| | **Capacity** | 256 GB | |
| | **Height** | 0.276 in (7 mm) | |
| | **Width** | 2.76 in (70 mm) | |
| | **Interface** | SATA 3 (6 Gb/s) | |
| | **Performance** | **Maximum Sequential Read** | **Maximum Sequential Write** |
| | | Up to 460 MB/s | Up to 260 MB/s |
| | **Logical Blocks** | 500,118,192 | |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [case temp] | |
| | **Features** | ATA Security; ATA-8 compliant; SATA 3.0; DIPM; TRIM | |
| **180 GB 2.5-inch SATA Solid State Drive** | **Drive Weight** | 78 Grams | |
| | **Capacity** | 180 GB | |
| | **Height** | 0.276 in (7 mm) | |
| | **Width** | 2.76 in (70 mm) | |
| | **Interface** | SATA 3 (6 Gb/s) | |
| | **Performance** | **Maximum Sequential Read** | **Maximum Sequential Write** |
| | | 550 MB/s | 520 MB/s |
| | **Logical Blocks** | 351,651,888 | |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [case temp] | |
| | **Features** | ATA Security; ATA-8, SATA 3.0; DIPM; TRIM | |

## Technical Specifications

| | | | |
|---|---|---|---|
| **SATA 6 Gb/s 128 GB, 2.5-inch Solid State Drive** | **Drive Weight** | 73 Grams | |
| | **Capacity** | 128 GB | |
| | **Height** | 0.276 in (7 mm) | |
| | **Width** | 2.76 in (70 mm) | |
| | **Interface** | SATA 3 (6 Gb/s) | |
| | **Performance** | **Maximum Sequential Read** | **Maximum Sequential Write** |
| | | 415 MB/s | 175 MB/s |
| | **Logical Blocks** | 250,069,680 | |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [case temp] | |
| | **Features** | ATA Security; ATA-8; SATA 3.0 DIPM; TRIM | |

| | | | |
|---|---|---|---|
| **Optical Drives** | | | |
| **DVD-ROM Drive** | **Access Times** | Random | < 140 ms CD (typical)<br>< 160 ms DVD (typical) |
| | **Max Data Transfer Rate** | 24X CD-ROM<br>8X-DVD | |
| | **Transfer Mode** | UDMA Mode 5 | |
| | **Interface** | Gen 1 SATA | |
| | **Supported Media** (read) | CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM | |
| | **Supported Media** (write) | None | |
| | **Max Media Capacity** (read) | 8.5GB | |
| | **Transport** | Tray Loading | |

Technical Specifications

| | | | |
|---|---|---|---|
| **DVD+/-RW SuperMulti DL Drive** | **Access Times** | Random | <140ms CD (typical)<br>< 160 ms DVD (typical) |
| | **Max Data Transfer Rate** | 24X CD-ROM<br>8X DVD<br>24X CD-R<br>24X CD-RW<br>8X DVD+R<br>8X DVD+RW<br>8X DVD-R<br>6X DVD-RW<br>6X - DVD+R Dual Layer<br>6X - DVD-R Dual Layer<br>5X DVD-RAM | |
| | **Transfer Mode** | UDMA Mode 5 | |
| | **Interface** | Gen 1 SATA | |
| | **Supported Media** (read) | CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM | |
| | **Supported Media** (write) | CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL | |
| | **Max Media Capacity** (read) | 8.5 GB | |
| | **Max Media Capacity** (write) | 8.5 GB | |
| | **Transport** | Tray Loading | |

## SECURITY

| | | |
|---|---|---|
| **HP Fingerprint Sensor** (optional) | **Mobile Voltage Operation** | 3.0V-3.6V Single Supply |
| | **Operating Temperature** | 32° - 158°F (0° - 70°C) |
| | **Current Consumption @ 3.3V** | Less than 70 mA peak imaging and scrolling<br>Less than 25 mA hardware finger detection<br>Advanced Power Management |
| | **High-Rate Image Capture** | Up to 240 image frames /sec |
| | **ESD Resistance** | IEC 61000-4-2 Level 4 (±15KV) |
| | **Detection Matrix** | 192 x 16 Pixels<br>9.7 mm x 0.81 mm<br>500 ppi High-Resolution Images |

## NETWORKING/COMMUNICATIONS

| | | |
|---|---|---|
| **Intel® 82579LM Gigabit Network Connection** | **Ethernet Features** | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbti/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023. Clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s<br>IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.1q VLAN support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)<br>IEEE 802.3az EEE(Energy Efficient Ethernet)<br>Jumbo Frame 9K<br>Auto MDI/MDIX Crossover cable detection |
| | **Power Management** | ACPI compliant - multiple power modes<br>Energy Detect Low Power Mode(Green Ethernet) |
| | **Performance Features** | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload( ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling<br>MACSec Offload (802.3ae)<br>Intel vPro<br>iSCSI Boot |
| | **Manageability** | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))<br>Comprehensive diagnostic and configuration software suite<br>Virtual Cable Doctor for Ethernet cable status |
| | **Interface** | PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ.<br>**NOTE:** Intel 82579 PCIe interface is not PCIe compliant. It operates at half of PCIe specification V1.1 (2.5GT/S) speed. |
| | **NIC Device Driver Name** | Intel 82579LM/82579V Ethernet Network Connection |

Technical Specifications

| | | |
|---|---|---|
| **V.92 56K Data/Fax Modem** | **Form Factor** | MDC 1.5 Daughtercard |
| | **Power Management Support** | APM Revision 1.2, ACPI |
| | **Approvals/ Certifications** | UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries |
| | **Data Mode Capabilities** | V.92 data<br>V.8bis<br>V.80<br>V44, V.42bis, MNP5 (Compression)<br>V.42 (LAPM, MNP2-4) (Error Correction)<br>**Optional symbol rates**:<br>2800, 3429<br>Asymmetric Symbol rates<br>**Synchronous primary channel data signaling rates**:<br>3600, 31200<br>Automatic rate re-negotiation<br>V.34<br>V.32bis<br>V.32<br>V.23<br>V.22bis<br>V.22<br>V.21<br>Bell 212A<br>Bell 103J |
| | **Fax Mode Capabilities** | TIA/EIA-578-B (Class 1)<br>T.30, T.4 (Group 3)<br>V.17<br>V.29<br>V.27ter<br>V.21 Channel 2<br>T.31 |
| | **Command Set** | V.250 (Partial)<br>TIA-602<br>Identification: +GMI, +GMM, +GMR<br>Port control: +IPR, +ICF, +IFC, +ILRR<br>Modulation: +MS, +MR, +MA<br>Error control: +ES, +ER, +EB, +ESR, +ETBM<br>Data compression: +DS, +DR<br>V.251 |

Technical Specifications

| | | |
|---|---|---|
| **HP un2430 EV-DO/HSPA Mobile Broadband Module** | **Technology/Operating Bands** | GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS)<br>UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), AWS (UTRA FDD Band IV), 900MHz(UTRA FDD Band VIII), 850MHz (UTRA FDD Band V)<br>1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS) |
| | **Wireless Protocol Standards** | GSM/GPRS/EDGE: Class A, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9.<br>UMTS/WCDMA: Release 99 and Release 6<br>CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-856, IS-2000 |
| | **Wireless Parametric Standards** | Meets or exceeds TIA/EIA IS-98-D |
| | **Maximum Data Rates** | UMTS (HSPA) - 14.4 Mbps (Download ), 5.76Mbps (Upload)<br>CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8Mbps (Upload) |
| | **GPS** | Standalone GPS enabled<br>gpsOneXTRATM™ |
| | **GPS Bands** | L1 - 1575.42 MHz |
| | **Maximum Output Power** | GSM/GPRS/EDGE: 32dBm (+/-1)<br>WCDMA: 24dBm (+0.7/-2.3)<br>CDMA: 24dBm (+0.7/-2) |
| | **Maximum Power Consumption** | 2750mA (peak); 1100mA (average) |
| | **Power Consumption, Idle Not Connected** | 20 mA |
| | **Power Management** | USB selective suspend<br>Integrated notebook wireless button |
| | **Antenna Type** | Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure |
| | **Form Factor** | PCI-Express MiniCard, USB 2.0 interface |
| | **Weight** | 11.5 g |
| | **Dimensions** (Length x Width x Thickness) | 2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm) |
| | **Voltage, Operating** | 3.3v +/- 10% |
| | **Temperature, Operating** (from TIA/EIA/IS-98-D) | -22° to 158° F (-30° to 70° C) (full RF performance)<br>-22° to 167° F (-30° to 75° C) (reduced RF performance) |
| | **Temperature, Non-operating, 96 hours** (from MIL-STD 202 Method 108) | -40° to 185° F (-40° to 85° C) |
| | **Humidity, Non-operating** | 95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing) |
| | **Configuration Utilities** | HP Connection Manager |
| | **LED Activity** | LED Off - Radio Off;<br>Solid LED On - Radio On |

## Technical Specifications

| | | |
|---|---|---|
| **HP hs2350 HSPA+ Mobile Broadband Module** | **Technology/Operating Bands** | GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS)<br>UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900Mhz (UTRA FDD Band II), 900Mhz(UTRA FDD Band VIII), 850 MHz (UTRA FDD Band V) |
| | **Wireless Protocol Standards** | GSM/GPRS/EDGE: Class B, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9.<br>UMTS/WCDMA: Release 99 and Release 7<br>Advanced Receiver Type 3i |
| | **Wireless Parametric Standards** | Complies with 3GPP specifications |
| | **Maximum Data Rates** | UMTS (HSPA) - 21 Mbps (Download ), 5.76Mbps (Upload) |
| | **GPS** | Standalone, A-GPS (Internet- and Network assisted) |
| | **GPS Bands** | 1575.42 MHz (± 1.023 MHz) |
| | **Maximum Output Power** | GSM/EDGE<br>GSM850 & GSM900 bands<br>GPRS: +33 dBm ± 2 dBm (class 4)<br>EGPRS: +27 dBm ± 3 dBm (class E2)<br><br>DCS1800 & PCS1900 bands<br>GPRS: +30 dBm ± 2 dBm (class 1)<br>EGPRS: +26 dBm +4 / -3 dBm (class E2)<br><br>UMTS<br>UTRA FDD Bands<br>+24 dBm +4 / -3 dBm (class 3) |
| | **Maximum Power Consumption** | 2000mA (peak); 600mA (average) |
| | **Power Consumption, Sleep Mode** | 5 mA |
| | **Power Management** | USB selective suspend<br>Integrated notebook wireless button |
| | **Antenna Type** | Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure |
| | **Form Factor** | PCI-Express MiniCard, USB 2.0 interface |
| | **Weight** | < 12 g |
| | **Dimensions** (Length x Width x Thickness) | 2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm) |
| | **Voltage, Operating** | 3.3v +/- 9% |
| | **Temperature, Operating** | 14° to 149° F (-10° to 65° C) (full RF performance)<br>14° to 167° F (-10° to 75° C) (reduced RF performance) |
| | **Temperature, Non-operating, 96 hours** (from MIL-STD 202 Method 108) | -22° to 185° F (-30° to 85° C) |
| | **Humidity, Non-operating** | 85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing) |
| | **Configuration Utilities** | HP Connection Manager |

| | | |
|---|---|---|
| | **LED Activity** | LED Off - Radio Off;<br>Solid LED On - Radio On |
| **Intel Centrino Advanced-N 6205 (2x2)** | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n |
| | **Interoperability** | Wi-Fi certified<br>Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) |
| | **Frequency Band** | 2.4 GHz and 5GHz |
| | **Antenna Structure** | 2 transmit; 2 receive (2x2) |
| | **Data Rates** | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification |
| | **Modulation** | Direct Sequence Spread Spectrum<br>DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM |
| | **Security**[1] | Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST)<br><br>Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2<br><br>Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP<br><br>Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only. |
| | **Sub-channels** | Multinational support with frequency bands and channels compliant to local regulations. |
| | **Media Access Protocol** | CSMA/CA (Collision Avoidance) with ACK |
| | **Network Architecture**<br>**Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| | **Roaming** | IEEE 802.11 compliant roaming between 2.4GHz band Access Points |
| | **Output Power** (for CCK and OFDM)[2] | 17 dBm max |
| | **Power Consumption** | Transmit: 2.3 Watts (max, with two spatial streams)<br>Receive: 1 Watt (max with two spatial streams)<br>Idle mode[3]: 35 mW (average)<br>Radio off: 20 mW (max) |
| | **Power Management** | ACPI compliant power management<br>802.11 compliant power saving mode |
| | **Receiver Sensitivity**[4] | 54 Mbps: -76 dBm, 6 Mbps: -92 dBm |
| | **Antenna Connections** | 2 U.FL type connectors, 50 ohm nominal impedance |

Technical Specifications

| | | |
|---|---|---|
| **Form Factor** | PCI-Express Half-MiniCard | |
| **Weight** | 0.0075 lb (3.4 g) | |
| **Dimensions** | 0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm) | |
| **Operating Voltage** | 3.3V +/- 9% | |
| **Temperature** | Operating<br>Non-operating | 32° to 176° F (0° to 80° C)<br>-40° to 176° F (-40° to 80° C) |
| **Humidity** | Operating<br>Non-operating | 10% to 90% (non-condensing)<br>5% to 90% (non-condensing) |
| **Altitude** | Operating<br>Non-operating | 0 to 10,000 ft (3,048 m)<br>0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Off - Radio OFF; Solid LED On - Radio ON | |

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

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**Broadcom BCM943228HM4L 802.11 a/b/g/n WiFi Adapter (2x2)**

| | |
|---|---|
| **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n |
| **Interoperability** | Wi-Fi certified<br>Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) |
| **Frequency Band** | 2.4 GHz and 5 GHz |
| **Data Rates** | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: 6, 6.5, 9, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300 Mbps |
| **Frequency Support** | 20 MHz: 2.4 GHz and 5 GHz bands<br>40 MHz: 2.4 GHz and 5 GHz bands |
| **Modulation** | Direct Sequence Spread Spectrum<br>DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM |
| **Security[1]** | Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.<br><br>Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only. |
| **Sub-channels** | Multinational support with frequency bands and channels compliant to local regulations. |

Technical Specifications

| | | |
|---|---|---|
| **Media Access Protocol** | CSMA/CA (Collision Avoidance) with ACK | |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) | |
| **Roaming** | IEEE 802.11 compliant roaming between access points | |
| **Output Power** (for CCK)2 | 17 dBm , nominal | |
| **Output Power** (for OFDM; power varies by data rate)2 | 15 dBm , nominal | |
| **Power Consumption** | Idle associated: 250 mW<br>Idle unassociated: 150 mW<br>Transmit/Receive 20 MHz channel: 2.0 W (max)<br>Transmit/Receive 40 MHz channel: 2.0 W (max) | |
| **Power Management** | ACPI compliant power management<br>802.11 compliant power saving mode | |
| **Receiver Sensitivity**[3] | 270 Mbps: -61dBm, , 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -92 dBm | |
| **Antenna Connections** | High efficiency dual band antenna with spatial diversity, mounted in the display enclosure | |
| **Form Factor** | PCI-Express Half-MiniCard | |
| **Weight** | 0.013 lb (6 g) | |
| **Dimensions** | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm) | |
| **Operating Voltage** | 3.3v +/- 10% | |
| **Temperature** | Operating<br>Non-operating | 14° to 149° F (-10° to 65° C)<br>-40° to 176° F (-40° to 80° C) |
| **Humidity** | Operating<br>Non-operating | 10% to 90% (non-condensing)<br>5% to 95% (non-condensing) |
| **Altitude** | Operating<br>Non-operating | 0 to 10,000 ft (3,048 m)<br>0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Off - Radio OFF; Solid LED On - Radio ON | |

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

| | | |
|---|---|---|
| **Atheros AR9485 802.11 b/g/n WiFi Adapter (1x1)** | **Wireless LAN Standards** | IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n |
| | **Interoperability** | Wi-Fi certified |
| | **Frequency Band** | 2.4 GHz |

Technical Specifications

| | | |
|---|---|---|
| **Data Rates** | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: many possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification | |
| **Modulation** | Direct Sequence Spread Spectrum<br>DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM | |
| **Security**[1] | Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. | |
| **Sub-channels** | Multinational support with frequency bands and channels compliant to local regulations. | |
| **Media Access Protocol** | CSMA/CA (Collision Avoidance) with ACK | |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) | |
| **Roaming** | IEEE 802.11 compliant roaming between access points | |
| **Output**2 | 13.5 dBm, nominal | |
| **Power Consumption** | Transmit: 2.0 W (max)<br>Receive: 1.6 W (max)<br>Associated to Access Point, Idle: 250 mW nominal<br>Wireless Button Off: 100 mW nominal<br>Radio disabled: 75 mW nominal | |
| **Power Management** | ACPI compliant power management<br>802.11 compliant power saving mode | |
| **Receiver Sensitivity**[3] | 72.2 Mbps: -70 dbm, 54 Mbps: -74 dBm, 11 Mbps: -88 dBm , 1 Mbps: -95 dBm | |
| **Antenna Connections** | High efficiency antenna with spatial diversity, mounted in the display enclosure | |
| **Form Factor** | PCI-Express Half-MiniCard 1.2 | |
| **Weight** | 0.013 lb (6 g) | |
| **Dimensions** | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm) | |
| **Operating Voltage** | 3.3v +/- 9% | |
| **Temperature** | Operating<br>Non-operating | 14° to 158° F (-10° to 70° C)<br>-40° to 176° F (-40° to 80° C) |
| **Humidity** | Operating<br>Non-operating | 10% to 90% (non-condensing)<br>5% to 95% (non-condensing) |
| **Altitude** | Operating<br>Non-operating | 0 to 10,000 ft (3,048 m)<br>0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Off - Radio OFF; Solid LED On - Radio ON | |

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

| | | |
|---|---|---|
| **HP Integrated Module** | **Bluetooth Specification** | 4.0+EDR Compliant |

## Technical Specifications

| | | |
|---|---|---|
| **with Bluetooth 4.0+EDR Wireless Technology** | **Dimensions** | 1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm) |
| | **Frequency Band** | 2402 to 2480 MHz |
| | **Number of Available Channels** | 79 (1 MHz) available channels |
| | **Data Rates and Throughput** | 3 Mbps data rate; throughput up to 2.17 Mbps<br>Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric |
| | **Transmit Power** | -1.5 dBm to 4 dBm (Bluetooth Class II) |
| | **Receiver Sensitivity** | Better than -20 dBM at 0.1 % raw bit error rate |
| | **Power Consumption** | Peak (Tx) 264 mW<br>Peak (Rx) 231 mW<br>Sleep <1 mW |
| | **Antenna** | Internally integrated within module |
| | **Range** | Up 33 ft (10 m) |
| | **Electrical Interface** | USB 2.0 compliant<br>Microsoft Windows Plug and Play compliant |
| | **Bluetooth Software Supported** | Broadcom Bluetooth for Windows<br>Microsoft Windows Bluetooth Software |
| | **Link Topology** | Point to Point, Multipoint Pico Nets up to 7 slaves |
| | **Security** | Full support of Bluetooth Security Provisions |
| | **Power Management** | Microsoft Windows ACPI, and USB Bus Support<br>Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff |
| | **Certifications** | All necessary regulatory approvals for supported countries, including:<br>FCC (47 CFR) Part 15C, Section 15.247 & 15.249<br>ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark |
| | **Temperature** | Operating: -14° to 158° F (-10° to 70° C)<br>Non-operating: -40° to 212° F (-40° to 100° C) |
| | **Humidity** | Operating: 0% to 90%<br>Non-operating: 0% to 95% |
| | **Altitude** | Operating: 15,000 ft (4,572 m)<br>Non-operating: 40,000 ft (12,192 m) |
| | **Bluetooth Profiles Supported** | Serial Port Profile (SPP)[1]<br>Service Discovery Application Profile (SDAP)<br>Dial-Up Networking (DUN)[1,2]<br>Generic Object Exchange Profile (GOEP)[1,2]<br>Object Push Profile (OPP)[1,2]<br>File Transfer Profile (FTP) |

Synchronization Profile (SYNC)
Hard Copy Cable Replacement (HCRP)[1,2]
Personal Area Networking Profile (PAN)[1,2]
Human Interface Device Profile (HID)[1,2]
FAX Profile (FAX)
Basic Imaging Profile (BIP)[2]
Headset Profile (HSP)
Hands Free Profile (HFP)
Advanced Audio Distribution Profile (A2DP)

1. indicates the profile is supported by Microsoft Windows XP SP2
2. indicates the profile is part of Windows Vista

## AUDIO/MULTIMEDIA

| | | |
|---|---|---|
| **Hardware** | **Implementation** | IDT 92HD87 High Definition CODEC |
| | **Function-Key Volume Controls** | Volume up, volume down, and mute |
| | **Full Duplex** | Yes |
| | **Microphone In** | Stereo |
| | **Headphone/Line Out** | Stereo |
| | **Integrated Microphone** | Yes, dual digital microphone array when equipped with optional webcam |
| **Audio Output Quality** | **Frequency Response** | 20 Hz - 20 kHz |
| | **Signal to Noise Ratio** | >85 dB |
| | **Total Harmonic Distortion** | 0.01% |
| | **Noise Floor** | -110 dB |
| | **Play/Record Sampling Rate**(s) | 8 kHz - 48kHz |
| | **DAC** | 16, 20 or 24-bit |
| | **ADC** | 16 or 20-bit |
| **Internal Stereo Speaker** | **Power Rating** | 2 Watts |
| | **Impedance** | 4 ohms |

## POWER

## Technical Specifications

| | | | |
|---|---|---|---|
| **HP 65W Smart AC Adapter** | **Dimensions** | 4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm) | |
| | **Weight** | 0.62 lb (280 g) | |
| | **Input** | 100 to 240 VAC | |
| | | **Input Efficiency** | 87% min at 115 VAC |
| | | **Input frequency range** | 47 to 63 Hz |
| | | **Input AC current** | 1.7 A at 90 VAC, 0.85 A at 180 VAC |
| | **Output** | **Output power** | 65W |
| | | **DC output** | 18.5V |
| | | **Hold-up time** | 5 msec at 115 VAC input |
| | | **Output current limit** | <11A, Over voltage protection- 29V max automatic shutdown |
| | **Connector** | 3 pin/grounded, mates with interchangeable cords | |
| | **Environmental Design** | **Operating temperature** | 32° to 104° F (0° to 40° C) |
| | | **Non-operating (storage) temperature** | -4° to 149° F (-20° to 65° C) |
| | | **Altitude** | 0 to 10,000 ft (0 to 3,048 m) |
| | | **Humidity** | 20% to 80% |
| | | **Storage Humidity** | 10% to 90% |
| | **EMI and Safety Certifications** | CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition. | |

| | | | |
|---|---|---|---|
| **HP 9-cell (100 WHr) Lithium-Ion Primary battery** | **Dimensions** (H x W x L) | 0.8 x 2.4 x 8.1in (2 x 6.6 x 20.5cm) | |
| | **Weight** (max) | 1.1lb, (.488kg) | |
| | **Cells/Type** | Lithium-Ion | |
| | **Energy** | **Voltage** | 11.25V |
| | | **Amp-hour capacity** | 8.85Ah |
| | | **Watt-hour capacity** | 100Wh |
| | **Temperature** | **Operating (Charging)** | 32° to 113° F (0° to 45° C) |
| | | **Operating (Discharging)** | 14° to 122° F(-10° to 50° C) |
| | | **Non-operating** | -4° to 122° F (-20° to 50° C) |
| | **Battery Re-Charge Time** | **System in OFF or Standby Mode** | 3.5 to 5 hours |
| | | **System ON** | 4 to 7 hours |
| | **Fuel Gauge LED** | No | |
| | **Warranty** | 1 year | |
| | **Compatible with optional Travel Battery** | Yes | |

| | | | |
|---|---|---|---|
| **HP 6-cell (62 WHr) Lithium-Ion Primary battery** | **Dimensions** (H x W x L) | 0.8 x 2.0 x 8.3 in (2.0 x 5.1 x 21.1 cm) | |
| | **Weight** (max) | 0.72 lb (0.325 kg) | |
| | **Cells/Type** | 6-cell Lithium-Ion | |
| | **Energy** | **Watt-hour capacity** | 62Wh |
| | **Temperature** | **Operating (Charging)** | 32° to 113° F (0° to 45° C) |
| | | **Operating (Discharging)** | 14° to 140° F (-10° to 60° C) |
| | | **Non-operating** | -4° to 140° F (-20° to 60° C) |
| | **Battery Re-Charge Time** | **System in OFF or Standby Mode** | 2.5 hours |
| | **Warranty** | 1 year | |
| | **Compatible with optional Travel Battery** | Yes | |

| | | | |
|---|---|---|---|
| **HP 6-cell (55 WHr) Long Life Primary Battery** | **Dimensions** (H x W x L) | 0.8 x 1.8 x 8.0in (2.0 x 4.7 x 20.5cm) | |
| | **Weight** (max) | .72lb, (.323kg) | |
| | **Cells/Type** | Lithium-Ion | |
| | **Energy** | **Voltage** | 10.8V |
| | | **Amp-hour capacity** | 5.1Ah |
| | | **Watt-hour capacity** | 55Wh |
| | **Temperature** | **Operating (Charging)** | 32° to 113° F (0° to 45° C) |
| | | **Operating (Discharging)** | 14° to 122° F(-10° to 50° C) |
| | | **Non-operating** | -4° to 122° F (-20° to 50° C) |
| | **Battery Re-Charge Time** | **System in OFF or Standby Mode** | 2.5 hours |
| | | **System ON** | 3 to 5 hours |
| | **Fuel Gauge LED** | No | |
| | **Warranty** | 3 years | |
| | **Compatible with optional Travel Battery** | Yes | |

Technical Specifications

| | | | |
|---|---|---|---|
| **HP 3-cell (31 WHr) Lithium-Ion Primary battery** | **Dimensions** (H x W x L) | 0.8 x 1.2 x 8.1 in (2 x 3 x 20.5cm) | |
| | **Weight** (max) | 0.37lb, (0.166kg) | |
| | **Cells/Type** | Lithium-Ion | |
| | **Energy** | **Voltage** | 11.1V |
| | | **Amp-hour capacity** | 2.8Ah |
| | | **Watt-hour capacity** | 31Wh |
| | **Temperature** | **Operating (Charging)** | 32° to 113° F (0° to 45° C) |
| | | **Operating (Discharging)** | 14° to 122° F(-10° to 50° C) |
| | | **Non-operating** | -4° to 122° F (-20° to 50° C) |
| | **Battery Re-Charge Time** | **System in OFF or Standby Mode** | 2.5 hours |
| | | **System ON** | 3 to 5 hours |
| | **Fuel Gauge LED** | No | |
| | **Warranty** | 1 year | |
| | **Compatible with optional Travel Battery** | Yes | |

## ENVIRONMENTAL

**Environmental Data**

| | | | | |
|---|---|---|---|---|
| **Eco-Label Certifications** | This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:<br><br>US Energy Star ®<br>IT ECO declaration<br>EPEAT Gold where HP registers commercial desktop products. See for registration status in your country US Federal Energy Management Program (FEMP) | | | |
| **System Configuration** | The configuration used for the Energy Consumption and Declared Noise Emissions data is based on a "Typically Configured Notebook" | | | |
| **Energy Consumption** | | 115 VAC | 230 VAC | 100 VAC |
| Normal Operation | | 12.21 W | 12.96 W | 12.29 W |
| Sleep (Energy Star low power mode) | | 0.61 W | 0.72 W | 0.59 W |
| Off | | 0.37 W | 0.42 W | 0.35 W |
| **Heat Dissipation*** | | 115 VAC | 230 VAC | 100 VAC |
| Normal Operation | | 42 BTU/hr | 44 BTU/hr | 42 BTU/hr |
| Sleep | | 2 BTU/hr | 2 BTU/hr | 2 BTU/hr |
| Off | | 1 BTU/hr | 1 BTU/hr | 1 BTU/hr |

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

**Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)**

| System Fan Off | Sound Power (LWAd, bels) | Sound Pressure (LpAm, decibels) |
|---|---|---|
| Idle | | 23 |
| Fixed Disk (random writes) | | 24 |

System fan is usually off except when charging the battery

**Batteries**

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:

CR2032 (coin cell), Li-ion
6-cell high capacity Lithium-Ion battery (optional 8 cell available)

**Additional information**

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 22% post consumer recycled plastic (by wt.)

This product is greater than 96.1% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
  - PAPER/Corrugated 404.4 g
- Internal:
  - PLASTIC/Polyethylene low density 12.1 g
  - PLASTIC/EPE-Expanded Polyethylene 61 g
  - PLASTIC/Polyester 6.5 g

- The PAPER/Corrugated packaging material is made from 80% recycled content.
- The PLASTIC/Polyethylene high density packaging material is made from 60% recycled content.
- The PLASTIC/EPE-Expanded Polyethylene packaging material is made from 60% recycled content.
- The PLASTIC/Polyester packaging material is made from 60% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

**MATERIAL USAGE**

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment (http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.

- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
- Nickel finishes that release greater than 0.5 µgrams/$cm^2$/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.

### END-OF-LIFE MANAGEMENT AND RECYCLING

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

### HEWLETT-PACKARD CORPORATE ENVIRONMENTAL INFORMATION

For more information about HP's commitment to the environment:

Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Environment website
http://www.hp.com/environment
Eco-label certifications
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html
ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

Options and Accessories (sold separately and availability may vary by country)

| Type | Description | Part # |
|---|---|---|
| **Memory** | HP 2 GB (DDR3 1333 MHz) SODIMM | AT912AA#xxx |
| | HP 4 GB (DDR3 1333 MHz) SODIMM | AT913AA#xxx |
| | HP 8 GB (DDR3 1333 MHz) SODIMM | QP013AA#xxx |
| | HP 2 GB PC3-12800 (DDR3 1600 MHz) SODIMM | H2P63AA#xxx |
| | HP 4 GB PC3-12800 (DDR3 1600 MHz) SODIMM | H2P64AA#xxx |
| | HP 8 GB PC3-12800 (DDR3 1600 MHz) SODIMM | H2P65AA#xxx |
| | **NOTE:** Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements. Due to system limitations, DDR3-1600 MHz memory will only be supported at DDR3-1333 MHz. | |
| **Cases** | HP Professional Slim Top Load Case | BP848AA |
| | HP Professional Series Backpack | BP849AA |
| **Docking** | HP 2570p Docking Station | A9B77AA |
| | HP Dual Hinge Notebook Stand | AW661AA |
| | HP Display and Notebook Stand | AW662AA |
| **Input/Output - Mice** | HP 2.4 GHz Wireless Optical Mobile Mouse | LX732AA |
| | HP Wireless Mobile Mouse | H2L63AA |
| | HP USB Essential Keyboard/Mouse | H2S75AA |
| **Adapters** | HP 90W Slim Adapter | BT796AA |
| | HP 90W Smart AC/Auto/Air Combo Adapter | AJ652AA |
| **Storage - External Storage** | HP Mobile USB DVDRW | A2U57AA |
| **Batteries** | HP SX06XL Long Life Notebook Battery | QK644AA |
| | HP SX09 Notebook Battery | QK645AA |
| **Health and Education** | HP 20-Notebook Managed Charging Cart | QL489AA |
| | HP 20-Notebook Charging Cart | QL488AA |
| | HP 30-Notebook Managed Charging Cart | QL490AA |
| | HP Pocket Whiteboard | A0X37AA |
| **Security** | HP Docking Station Cable Lock | AU656AA |

## Options and Accessories (sold separately and availability may vary by country)

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